

STATUS/AMENDMENTS OF THE CLAIMS:

1. (Currently Amended) A semiconductor device including comprising:
a semiconductor chip having a principal surface and a back surface,
opposite to said principal surface, disposed in a device hole provided in a tape
carrier including a base layer and a lead portion bonded thereto with one end of
a lead of said lead portion being electrically connected to an external terminal of
said semiconductor chip, said semiconductor device being disposed in the
device hole such that the principal surface thereof is facing in the same direction
as the side of said base layer to which said lead portion is bonded,
~~characterized in that~~ and including an integrated circuit and a plurality of external
terminals formed on said principal surface;

a tape carrier having a base substrate and a plurality of lead portions
formed on one surface of said base substrate, said base substrate having a
device hole and a plurality of through hole wirings formed at both sides of said
device hole, said plurality of through hole wirings extending from said one
surface to the other surface of said base substrate and being electrically
connected to said plurality of lead portions,

wherein said semiconductor chip is disposed in said device hole of said
base substrate and first ends of said plurality of lead portions are electrically
connected to said plurality of external terminals of said semiconductor chip, and

wherein said semiconductor chip has a reduced thickness defined by
spin-etching of said back surface to effect a thinning of said semiconductor chip
to a thickness less than that of said tape carrier, ~~and that said thinned~~
~~semiconductor chip is sealed, covering both the principal and back surfaces~~
~~thereof, by a seal resin material to achieve a thickness at the resin sealed~~

~~location of said device equal to the combined thickness of the base layer and lead portion of said tape carrier~~

a seal resin material sealing said thinned semiconductor chip so that said principal surface and said back surface of said semiconductor chip are covered with said seal resin material; and

a plurality of bump electrodes formed on said one surface of said base substrate at said plurality of through hole wirings and being electrically connected to said plurality of lead portions, said plurality of bump electrodes providing a connection with a printed circuit board, while said plurality of through hole wirings at the other surface of said base substrate providing a connection with another device to be mounted on said tape carrier.

2. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein said semiconductor chip is disposed on a stress neutral plane extending parallel to the principal surface of said semiconductor chip at a position along the thickness direction of said tape carrier.

Claim 3 (withdrawn)

4. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein said seal resin material has its upper and lower surfaces substantially identical in level to upper and lower surfaces of said tape carrier.

5. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein an injection port for use in seal resin injection is provided at part of said tape carrier to effect coupling of said device hole to a gate of a metal mold structure used during formation of said seal resin.

6. (Currently amended) The semiconductor device as recited in claim 5, ~~characterized in that~~ wherein said tape carrier has an air exhaust port formed so that the device hole of said tape carrier is coupled to an air vent of the metal mold structure used during formation of said resin seal.

7. (Currently amended) The semiconductor device as recited in claim 5, ~~characterized in that~~ wherein an electroplated metal layer is formed at part of a surface of said tape carrier in close proximity to said injection port for seal resin injection, the part being brought into contact with the seal resin during formation of said resin seal.

8. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein said tape carrier has an air exhaust port formed so that the device hole of said tape carrier is coupled to an air vent of a metal mold structure used during formation of said resin seal.

9. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein said bump electrodes is provided at a remaining end of said lead for being are electrically connected to ~~a lead of a mount board for mounting thereon the semiconductor device~~ corresponding ones of leads of

said printed circuit board.

Claim 10 (withdrawn)

11. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein said semiconductor chip has its back surface polished by a spin-etching technique.

Claim 12 (cancelled)

13. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein a gold bump electrode is provided at each external terminal of said semiconductor chip, said gold bump electrode being coupled to said first end of ~~said~~ a respective lead.

14. (Currently amended) The semiconductor device as recited in claim 1, ~~characterized in that~~ wherein electroplating is applied to said first ~~one~~ ends of said leads causing the lead ends to be ~~directly coupled~~ connected to an corresponding ones of external terminals of said semiconductor chip.

Claims 15 – 24 (withdrawn)

Claims 25 - 32 (canceled)

33. (new) A semiconductor device comprising:

a semiconductor chip having a principal surface and a back surface, opposite to said principal surface, and including an integrated circuit and a plurality of external terminals formed on said principal surface;

a base wiring substrate having a plurality of lead portions formed on one surface of said base wiring substrate, said base wiring substrate having a device hole and a plurality of through hole wirings formed at both sides of said device hole, said plurality of through hole wirings extending from said one surface to the other surface of said base wiring substrate and being electrically connected to said plurality of lead portions,

wherein said semiconductor chip is disposed in said device hole of said base wiring substrate and said plurality of lead portions are electrically connected to said plurality of external terminals of said semiconductor chip, and

wherein said semiconductor chip has a reduced thickness defined by spin-etching of said back surface to effect a thinning of said semiconductor chip to a thickness less than that of said base wiring substrate;

a seal resin material sealing said thinned semiconductor chip so that said principal surface and said back surface of said semiconductor chip are covered with said seal resin material; and

a plurality of bump electrodes formed on said one surface of said base wiring substrate at said plurality of through hole wirings and being electrically connected to said plurality of lead portions, said plurality of bump electrodes providing a connection with a printed circuit board, while said plurality of through hole wirings at the other surface of said base wiring substrate providing a connection with another device to be stacked on said base wiring substrate.

34. (New) A semiconductor device as recited in claim 33, wherein said base wiring substrate includes a flexible base tape.